OIPE JC190
APR 2 0 2005
PATENT & TRADEMARK OFFICE

Table 1 (Parts Name to Fig.1. .)

1 CYCLO ID-GEAR HOUSING
2 CYCLO OD-GEAR DISK
3 ECCENTRIC 0+120+240deg. HOLLOW SHAFT
4 DRIVE-THROUGH HOLLOW FLANGE
5 CONTAINING FLANGE
6 BEARING RETAINER
7 PLANET GEARS
8 PLANET SUN GEAR
9 SUN GEAR HOLLOW AXIS
10 BEARING CYCLO AXIS
11 ECCENTRIC BEARING
12 BEARING SUN GEAR SHAFT
13 SNAP RING PLANET GEAR
14 SNAP RING FLANGE
15 SEAL X-TYPE
16 SNAP RING CENTER OF HOUSING

Fig. 1.1.

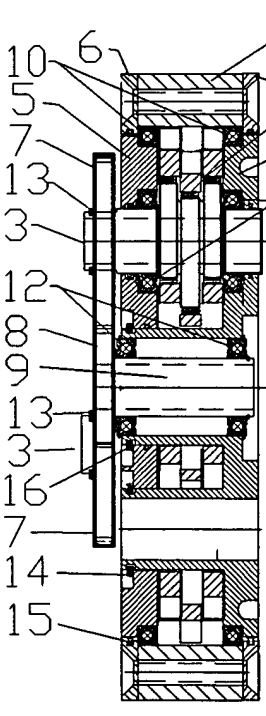
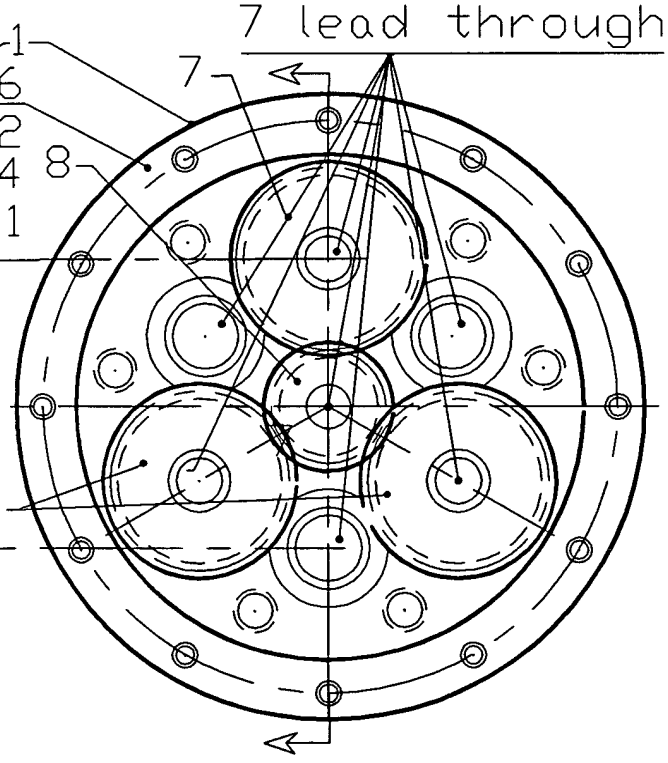


Fig. 1.2.



OIPE JC100
APR 20 2005
PATENT & TRADEMARK OFFICE

Fig.1.3 Fig.1.4 Fig.1.5 Fig.1.6

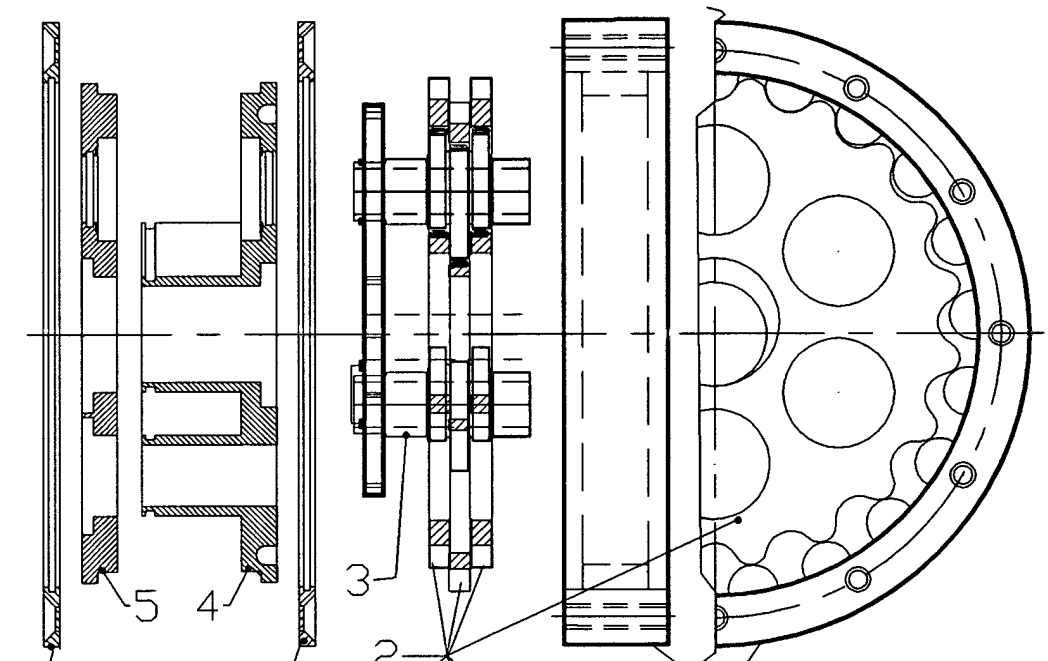


Fig.1.7

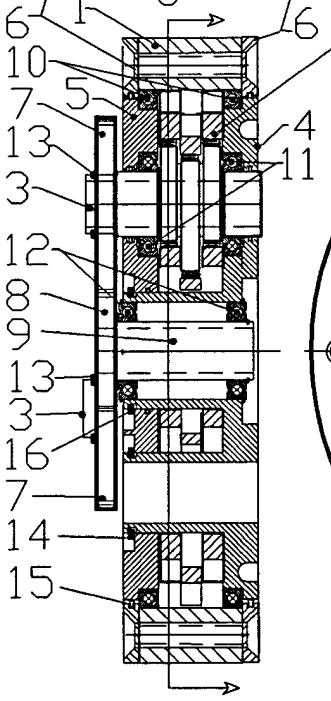
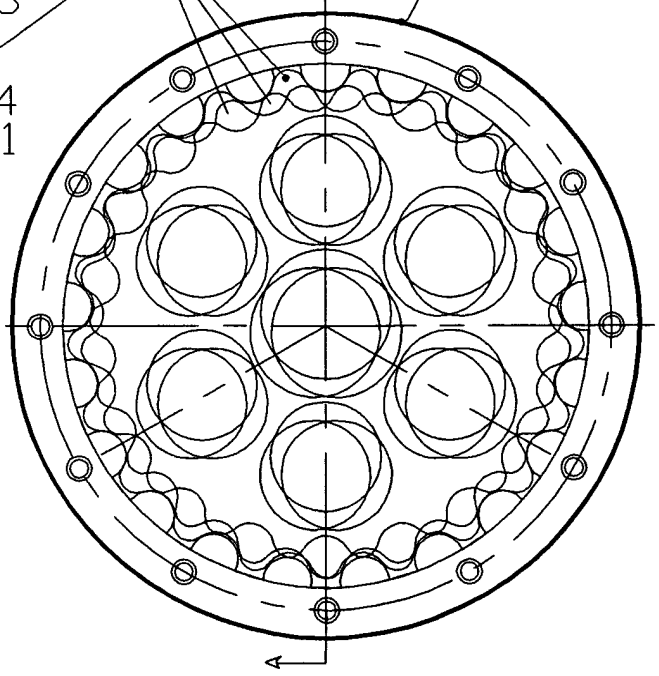


Fig.1.8



OIPE JC100
APR 20 2005
PATENT & TRADEMARK OFFICE

Table 2 (Cyclo Gear Relations and Symbols)

R = radius of cyclo tooth
r = r of Arc Tan(R D_2 R)
D = diameter at tooth centers
□ = offset of eccentrics
Z1 = number of cyclo gear teeth
Z2 = number of cyclo disk teeth

Relations:

Z2 = Z1 - 1
D1 = Z1 x R
D2 = Z2 x R
□ = R/2

e = Ecc. Index = 360deg /No of Cyclo Disks

Fig.1.9

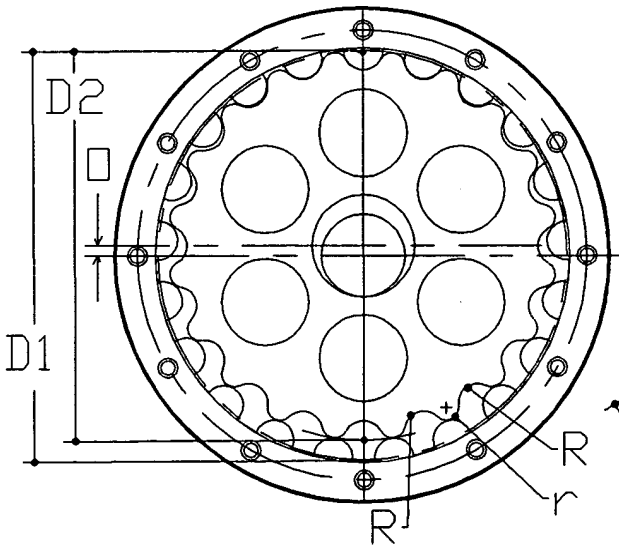
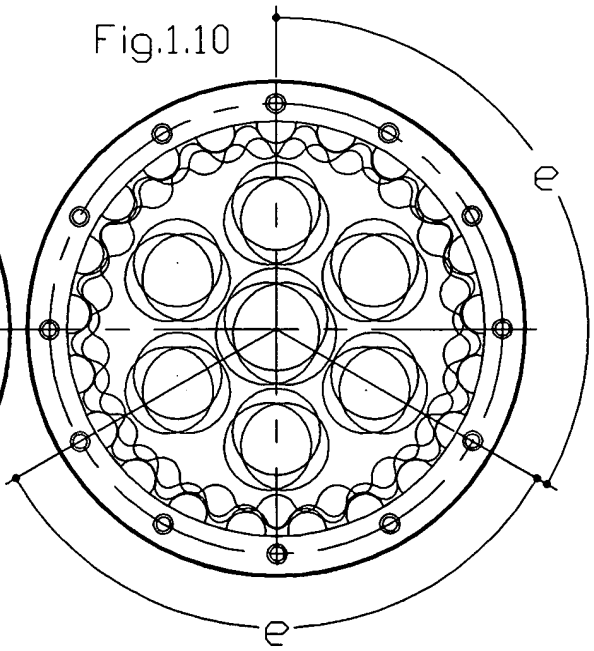


Fig.1.10

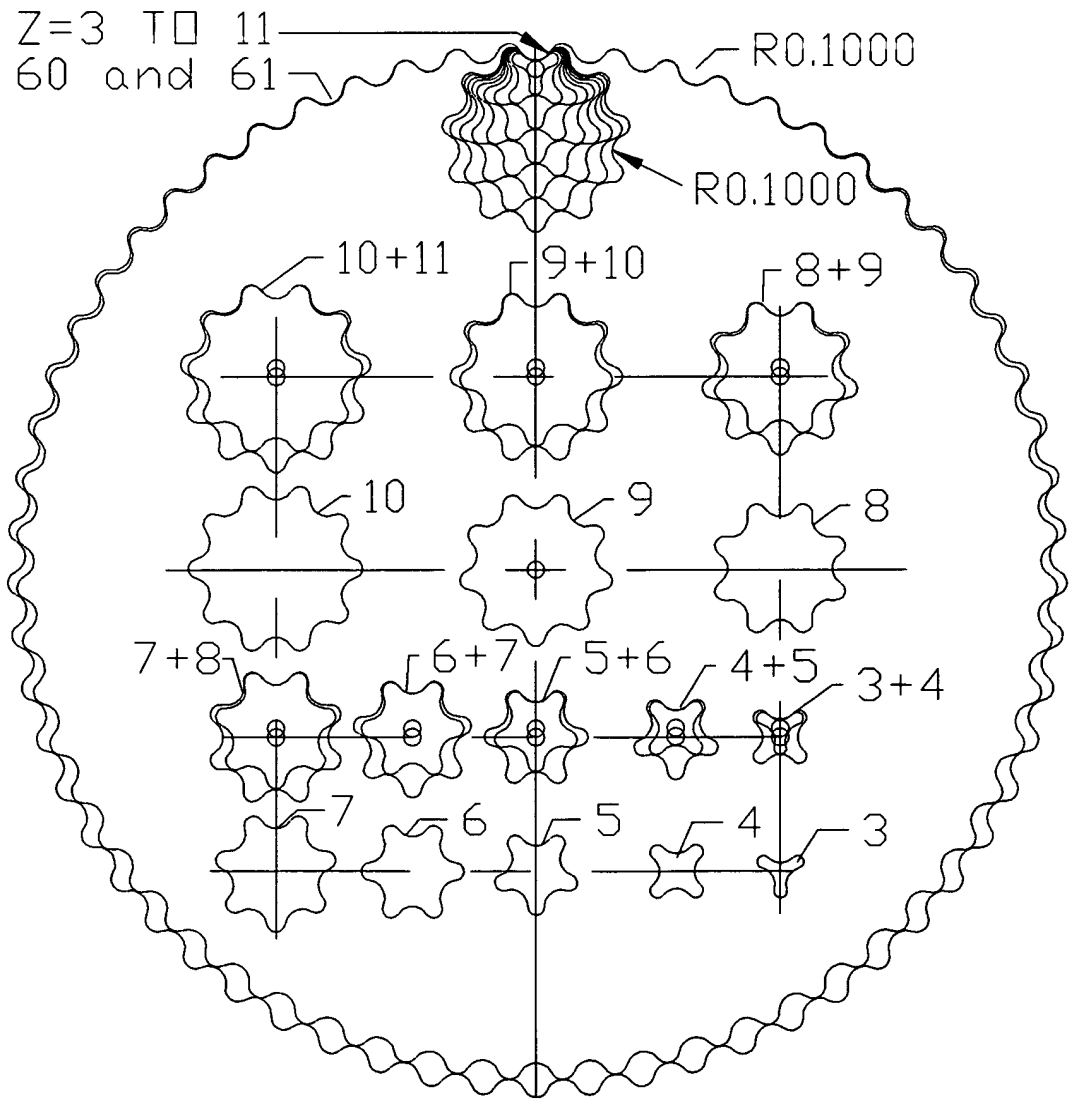


OIPE JC1&0
APR 2 0 2005
PATENT & TRADEMARK OFFICE

TABLE 3

Sample Cyclo Gear Relations from
3 to 11 and 60 and 61 Cyclo Teeth

Fig. 1.11



OIPE JC100
APR 20 2005
PATENT & TRADEMARK OFFICE

SCALE 1/2

Fig.1.12

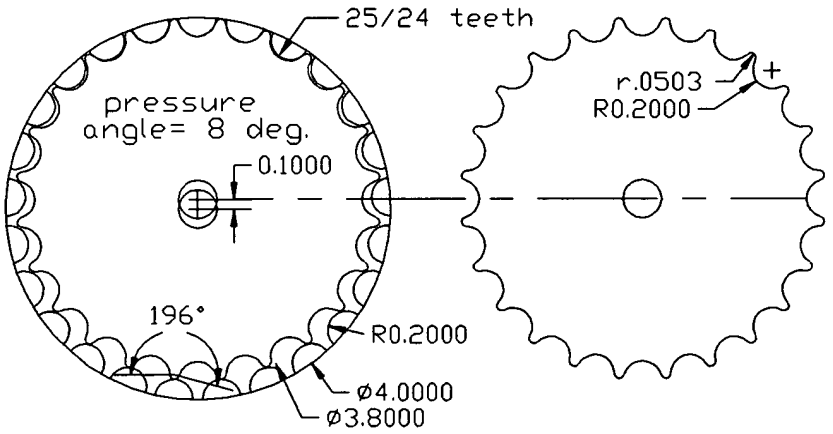


Fig1.13

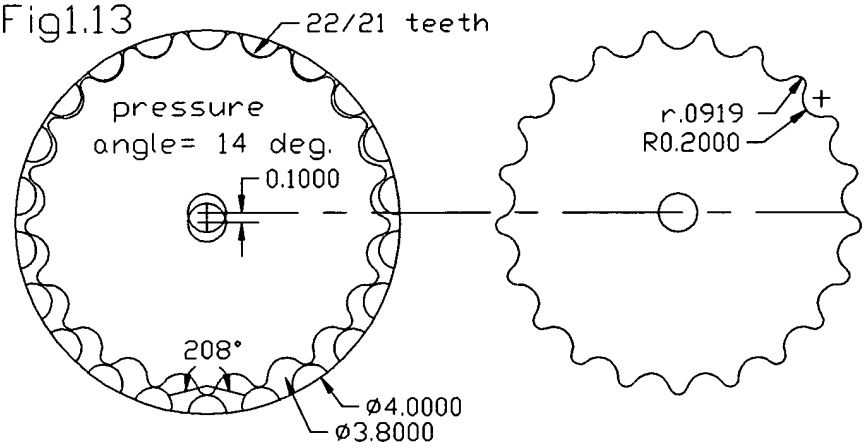
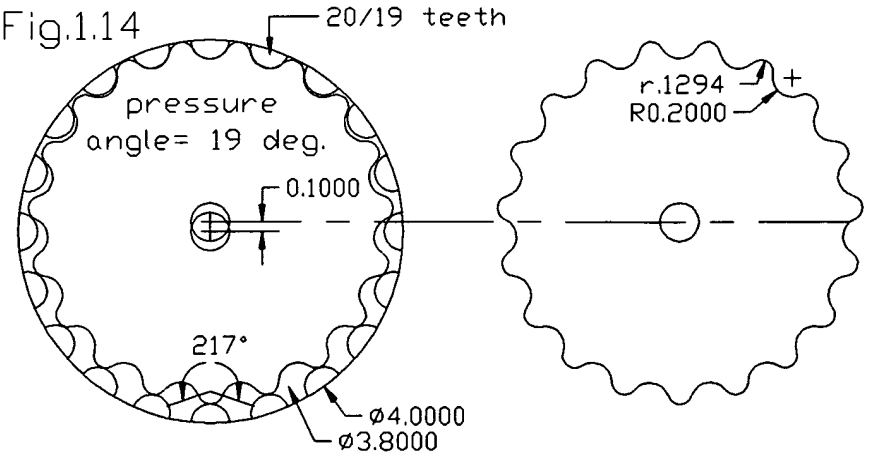


Fig.1.14



OIPE JC130 APR 20 2005 PATENT & TRADEMARK OFFICE

Center-Driven Cyclo Gear Axes with one Fig.2.1, two Fig.2.2, three Fig. 2.3 Center-Driven Wave Disks, six hollow Driveout Pints and Bushings.

Fig. 2

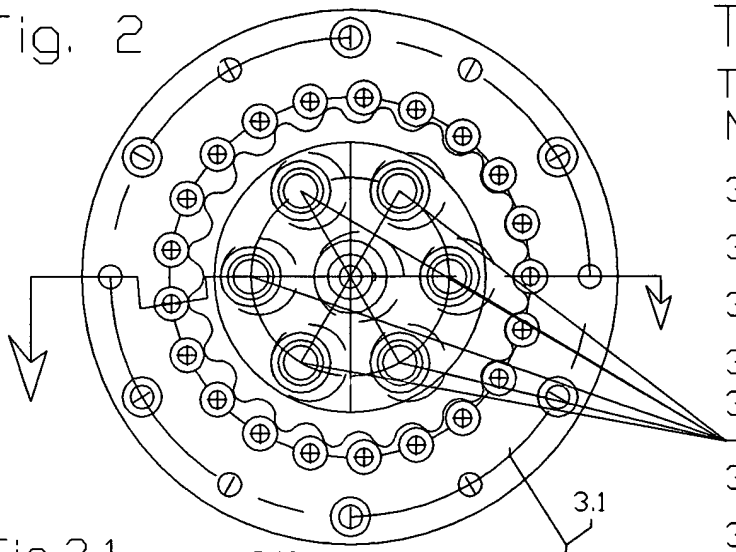


Fig.2.1
1 Disk

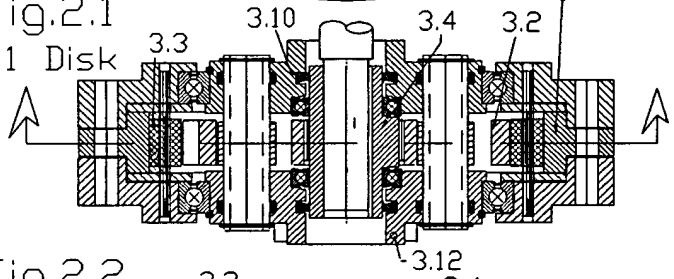


Fig.2.2
2 Disks

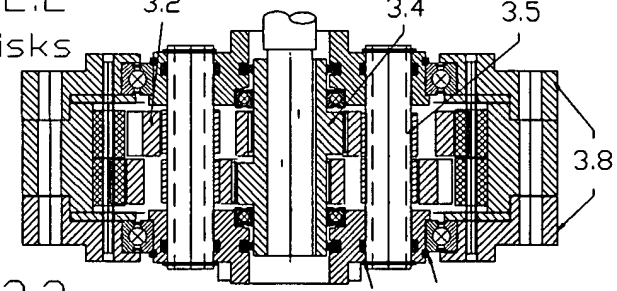


Fig.2.3
3 Disks

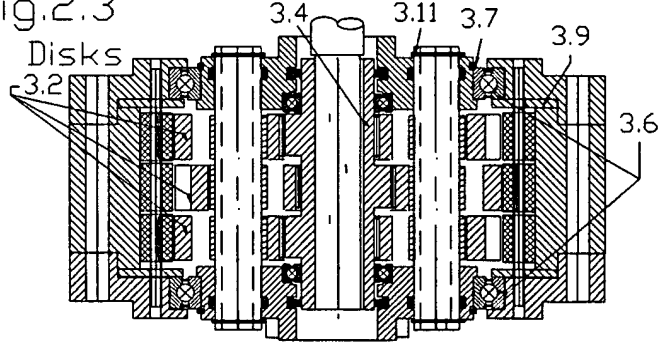


TABLE 4

To Fig.2. . Part Names

3.1 Cyclo Gear
3.2 Cyclo Disk(s)
3.3 Cyclo Rollers
3.4 Eccentric(s)
3.5 Hollow Pins - 6 Lead Through'
3.6 Bearing Flg.
3.7 Snap Ring
3.8 End Covers
3.9 Stop Rings
3.10 Shaft Seal
3.11 Snap Ring
3.12 Drive Flange.

OIPE JC190 APR 20 2005 PATENT & TRADEMARK OFFICE

Fig. 3

FREQUENCY SHIFT AND SERVO FILTER TO CONTROL CRITICAL FREQUENCY VIBRATION

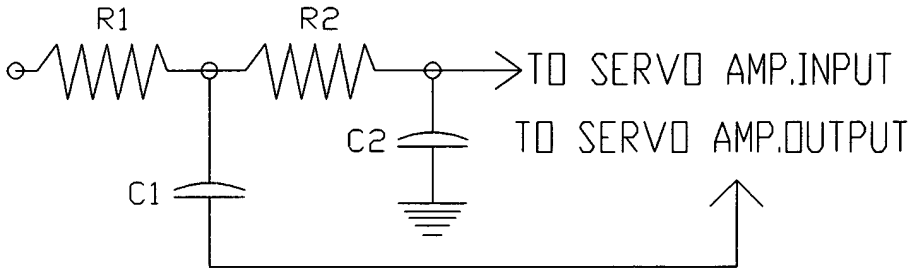
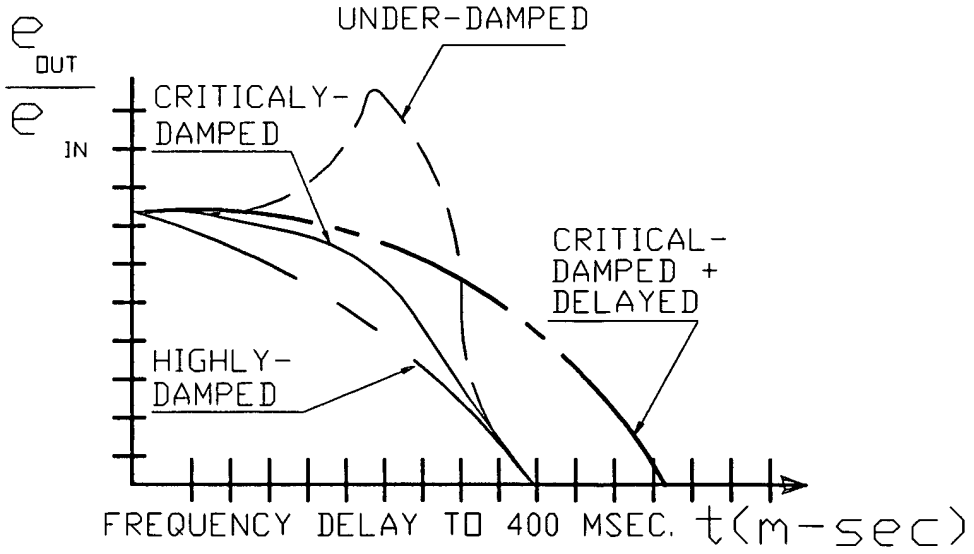
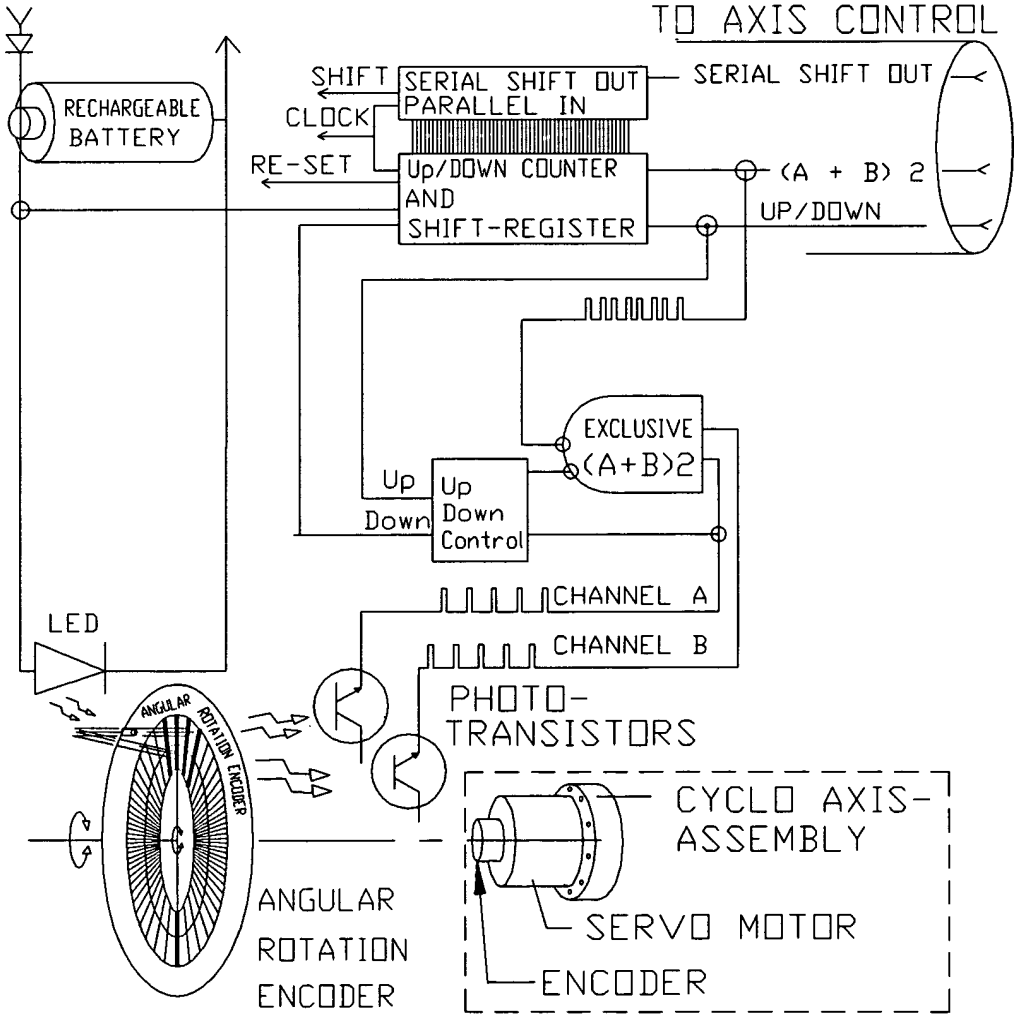


Fig. 4



O!PE JC130
APR 20 2005
PATENT & TRADEMARK OFFICE

Fig. 5

ONE DISK ABSOLUTE ANGULAR ROTATION ENCODER USING LOW-POWER INFRARED LED, TTL UP/DOWN COUNTER WITH SHIFT REGISTER AND LOCAL RECHARGEABLE BATTERY POWER BACKUP